AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the captioned patent application:

Listing of Claims:

1-24. (Cancelled)

25. (Currently Amended) A method of managing the supply of power to an output circuit of an implantable hearing prosthesis comprising a voltage converter circuit and a plurality of rechargeable batteries, the method comprising the steps of:

converting, ~~with an input~~ with the voltage converter circuit, a supply voltage to a battery voltage;

selectively connecting, using a switch matrix, a desired one of the ~~plurality of rechargeable~~ batteries to the ~~input~~ voltage converter circuit to charge the desired one of the ~~plurality of~~ batteries; ~~batteries; and~~

selectively connecting, using the switch matrix, a selected one of the ~~plurality of rechargeable~~ batteries~~, using the switch matrix,~~ to the ~~output~~ voltage converter circuit to enable the selected one of the batteries to be discharged through the output circuit; and

converting, with the voltage converter circuit, the voltage output from the selected one of the batteries to a voltage for use by the output circuit.

26. (Cancelled)

27. (Currently Amended) The method of claim 25, wherein the switch matrix comprises:

a plurality of switches having at least one switch for each ~~rechargeable battery~~ of the ~~plurality of rechargeable~~ batteries.

28. (Currently Amended) The method of claim 25, further comprising the step of:

enabling the charging of the desired one of the ~~plurality of~~ batteries and the discharging of the selected one of the batteries based on information on each of the ~~rechargeable~~ batteries stored in a register.

29. (Currently Amended) The method of claim 28, further comprising the steps of:

multiplexing and measuring parameters, such as battery voltage, battery charge and battery current, pertaining to each of the ~~rechargeable~~ batteries for storage as digital values in the register.

30. (Currently Amended) The method of claim 29, further comprising the step of:

maintaining a record in the register on the state of charge of each of the ~~rechargeable~~ batteries.

31. (Currently Amended) The method of claim 30, further comprising the step of:

providing an optimum range, as a percentage value of the state of charge, within which each ~~rechargeable~~ battery ~~is charged and/or~~ may be charged and discharged.

32. (Currently Amended) The method of claim 31, further comprising the step of:

disabling charging of the desired one of the ~~plurality of rechargeable~~ batteries where the charge of the desired one of the batteries is above a first percentage limit of the state of charge.

33. (Currently Amended) The method of claim 31, further comprising the step of:

terminating the discharging of the selected one of the ~~plurality of rechargeable~~ batteries where the charge of the selected one of the batteries is below a second percentage limit of the state of charge.

34. (Currently Amended) An implantable hearing prosthesis, comprising:

an output circuit; and

a power management system configured to supply power to the output circuit comprising:

a plurality of rechargeable batteries;

~~an input voltage~~ a voltage converter circuit configured to convert a supply voltage to a battery voltage; and

a switch matrix configured to selectively connect a desired one of the ~~plurality of rechargeable~~ batteries to the ~~input~~ voltage converter circuit for charging of the desired one of the batteries and to selectively connect a selected one of the ~~plurality of batteries~~ to the output circuit to enable the selected one of the batteries to be discharged through the output circuit,

wherein the voltage converter circuit further connects the output circuit to the switch matrix and is configured to convert the voltage of the selected one of the batteries to a voltage for use by the output circuit.

35-38. (Cancelled)

39. (Currently Amended) The ~~device~~ hearing prosthesis of claim 34, wherein the switch matrix comprises a plurality of switches enabling connection of the desired one of the ~~rechargeable~~ batteries to the ~~input~~ voltage converter circuit and of the selected one of the batteries to the output circuit.

40. (Currently Amended) The ~~device~~ hearing prosthesis of claim 34, further comprising:

a control unit configured to control the switch matrix to enable the charging of the desired one of the ~~plurality of~~ batteries and the discharging of the selected one of the batteries based on the state of charge of the ~~plurality of~~ batteries.

41. (Currently Amended) The ~~device~~ hearing prosthesis of claim 40, wherein the power management system further comprises:

a multiplexer having an input connected to one terminal of each of the ~~rechargeable~~ batteries to enable the voltage signals pertaining to each of the batteries to be selected and forwarded to an analog to digital converter.

42. (Currently Amended) The ~~device~~ hearing prosthesis of claim 41, wherein the power management system further comprises:

a shunt resistor connected to a second terminal of each of the ~~plurality of rechargeable~~ batteries to measure the charge current of each battery, represented as a voltage drop across the shunt resistor.

43. (Currently Amended) The ~~device~~ hearing prosthesis of claim 42, wherein the shunt resistor is connected in parallel to a shunt switch to short circuit the resistor when the resistor is not in use.

44. (Currently Amended) The ~~device~~ hearing prosthesis of claim 43, wherein the power management system further comprises:

an amplifier connected between the shunt resistor and the multiplexer to amplify the voltage drop across the resistor to the input voltage range of the analog to digital converter.

45. (Currently Amended) The ~~device~~ hearing prosthesis of claim 44, wherein the analog to digital converter measures individual battery voltage of anyone of the ~~rechargeable~~ batteries and converts the measured voltage to a digital value.

46. (Currently Amended) The ~~device~~ hearing prosthesis of claim 44, wherein the analog to digital converter measures the voltage drop across the shunt resistor and converts the measured voltage into a digital value.

47. (Currently Amended) The ~~device~~ hearing prosthesis of claim 46, further comprising:

a register configured to store information pertaining to each battery.

48. (Currently Amended) The ~~device~~ hearing prosthesis of claim 47, wherein said information comprises any one or more of charge status of each ~~battery in the plurality of rechargeable~~ of the batteries, error status of each ~~battery in the plurality of rechargeable~~ of the batteries or a flag identifying whether ~~a battery in the plurality of rechargeable~~ one of the batteries has been disabled from being charged or discharged.

49. (Currently Amended) The ~~device~~ hearing prosthesis of claim 48, wherein the control unit is in communication with the register and with the analog to digital converter for processing signals and data from the analog to digital converter and from the register.

50. (Currently Amended) The ~~device~~ hearing prosthesis of claim 49, wherein the control unit is configured to periodically sense the presence of a voltage at the input to the switch matrix.

51. (Currently Amended) The ~~device~~ hearing prosthesis of claim 50, wherein the control unit is configured to select ~~a battery of the plurality of rechargeable~~ one of the batteries to be charged or discharged on the basis of information stored in the register.

52. (Cancelled)

53. (Currently Amended) The ~~device~~ hearing prosthesis of claim 34, wherein the input voltage converter circuit includes an inductor, one or more switches and a switch control unit to enable charging of the desired one of the ~~plurality of rechargeable~~ batteries.

54. (Currently Amendment) The ~~device~~ hearing prosthesis of claim 36, wherein the output voltage converter circuit includes an inductor, one or more switches and a switch control unit to enable discharging of the selected one of the batteries.

55. (New) A system comprising:

a power supply having a first induction coil; and

an implantable hearing prosthesis comprising:

a second induction coil configured to detect a varying magnetic field from the first induction coil when the first and second induction coils are in close proximity;

an output circuit; and

a power management system configured to receive a supply voltage from the second induction coil and provide power to the output circuit, comprising:

a plurality of rechargeable batteries;

a voltage converter circuit configured to convert the supply voltage to a battery voltage; and

a switch matrix configured to selectively connect a desired one of the batteries to the conversion means for charging of the desired one of the batteries and for selectively connecting a selected one of the batteries to the output circuit to enable the selected one of the batteries to be discharged through the output circuit,

wherein the voltage converter circuit further connects the output circuit to the switch matrix and is configured to convert the voltage of the selected one of the batteries to a voltage for use by the output circuit.

56. (New) The system of claim 55, wherein the switch matrix comprises a plurality of switches enabling connection of the selected one of the batteries to the voltage converter circuit.

57. (New) The system of claim 55, further comprising:

a control unit configured to control the switch matrix to enable the charging of the desired one of the plurality of batteries and the discharging of the selected one of the batteries based on the state of charge of the plurality of batteries.

58. (New) The system of claim 55, wherein the power management system further comprises:

a multiplexer having an input connected to one terminal of each of the batteries to enable the voltage signals pertaining to each battery to be selected and forwarded to an analog to digital converter.

59. (New) The system of claim 58, wherein the power management system further comprises:

a shunt resistor connected to a second terminal of each of the batteries to measure the charge current of each battery, represented as a voltage drop across the shunt resistor.

60. (New) The system of claim 59, wherein the shunt resistor is connected in parallel to a shunt switch to short circuit the shunt resistor when the shunt resistor is not in use.

61. (New) The system of claim 60, wherein the power management system further comprises:

an amplifier connected between the shunt resistor and the multiplexer to amplify the voltage drop across the shunt resistor to the input voltage range of the analog to digital converter.

62. (New) The system of claim 60, wherein the power management system further comprises:

a register configured to store information pertaining to each of the batteries.

63. (New) The system of claim 62, wherein said information comprises any one or more of charge status of each of the batteries, error status of each of the batteries or a flag identifying whether one of the batteries has been disabled from being charged or discharged.

64. (New) The system of claim 55, wherein the voltage converter circuit is configured to enable discharging of the selected one of the batteries such that charge in the selected one of the batteries is forwarded to the output circuit.

65. (New) The system of claim 55, wherein the voltage converter circuit includes an inductor, one or more switches and a switch control unit to enable charging of the desired one of the batteries.